School Crossing Problems

James T. White, City Traffic Engineer
Fort Wayne, Indiana

The traffic engineering profession often finds itself deeply engrossed with traffic operational problems ranging from the development of expressways or freeways, to a simple intersection problem affecting only an immediate neighborhood location. The latter problem may only require a parking restriction near the corner or it may require the installation of a yield right-of-way sign. Between these extremeties, we often face a problem that is pressing us for attention and consideration throughout approximately three-fourths of the year. This problem involves the movement of children going to and from schools. It is a problem in which the parent is most deeply concerned and particularly so, if it happens to be the first child that is entering the school system of the community.

Each school year, the traffic problem to and from school is new to hundreds and hundreds of mothers and fathers. It is a traffic problem that has been recognized and corrected during previous school periods, but the child safety program requires a certain amount of rehashing so the parent may be familiar with previous action or action that may be programmed to satisfy their safety interests.

Parents, by and large, have been found to be primarily concerned with the student's safety to and from school. After this particular period of the day, child safety is often dismissed from their minds and acts of unsafe pedestrian or play habits are forgotten. A parent, in many cases, has sent a child to a neighborhood store with the instructions to hurry because a particular item is needed at that moment. The child, obeying its parent, rushes to the store, darts into the path of oncoming traffic and is injured. This moment of laxity has been common in many, many communities and in Fort Wayne. It has been an accident factor of which we have faced from time to time.

IMPORTANCE OF CROSSING AT INTERSECTIONS

Quite often children are instructed to cross a particular thoroughfare with the guidance of the parent. Most of our safety instructors,

through the Police Department and school officials, have repeatedly tried to emphasize to children that it is of prime importance that they cross a street at the intersection. This is one location where the motorist anticipates most anything to happen and is more or less aware that a pedestrian may be attempting to cross the street at such a point. The only limits upon any street for the motorist to travel are those areas between intersections. If the motorist is required to be alerted for the movement of pedestrians between blocks, then the motor vehicle becomes reduced in value in its importance of transporting person and goods.

The preceding statement is an example of which I can repeat with somewhat of a degree of authority. Several years ago, I was working very closely with the captain of traffic in charge of school safety. One afternoon we entered into a certain section of the city of Fort Wayne, and a school child was observed crossing the street at a mid-block location. The captain stopped the police car, approached the school child, and asked him where he was going.

He said: "I am crossing the street to go to that house, my mother is waiting for me to come home from school."

The captain replied, "In that case, I'll see to it that you get across the street safely."

In full authority of the powers invested in him, as a police officer, he stopped traffic at this mid-block location and escorted the child to his home. He advised the mother that not more than two weeks ago he had visited the school of which this particular child attended, and had instructed the children, they should cross the street at the intersection, not at a mid-block location of which she had just witnessed.

The mother replied: "I will see that my boy crosses this street every day, to and from school and you or no other police officer is going to tell my child where or how to cross the street in front of our house."

The captain then asked the mother, "But what are you going to do in case you may not be home when this boy is dismissed from school?"

The mother answered: "But I'll always be home."

Captain then asked, "Well, what would you do in case the class is held over the normal dismissal period or is dismissed earlier than a regular school day?"

The mother replied: "We will take care of that problem when it is necessary to meet it."

There was nothing much that the captain could do with the parent in this case. The irony of the foregoing conversation may be summed up in the fact; and when I say fact, it is a real fact.

Within a two week period after the episode mentioned, this particular youngster was dismissed from school at an earlier period than normally recognized. The mother had gone downtown to shop and hadn't returned home. The boy waited at the mid-block location to cross the street, but his mother wasn't on the front porch to guide him. The child failed to wait for a proper clearing of traffic and was struck by a car and seriously injured.

THE PARENT PROBLEM

This is a parental example presenting a problem involving a school crossing away from the immediate area of the school. Traffic engineers and our allies in the enforcement division find this particular problem most difficult to meet and to evaluate. It was my pleasure to work with school crossing problems in the "Pocket City" of Indiana, where I faced some very interesting parental problems. I will cite only one which took place at the "Pocket City" of Evansville in a school district of a well-established residential area, with substantial families and a large enrollment within the school. The problem in which the parents were primarily concerned involved a major street that fronted the school and carried high volumes of traffic. The parents were interested in reducing the speed within the school approach areas and immediately in front of the school itself. Preliminary studies made before submitting a formal recommendation, were made to obtain prevailing speeds as observed during the opening and closing periods of the school day. It was observed in several instances that a parent would dismiss the child from the car at the school; leave the immediate vicinity, and within the same period of assembly, drive at speeds from 15 to 20 miles an hour above the normal 30 mph residential speed regulation at this particular location.

It was not uncommon during the afternoon dismissal period, to see a parent approach the school entrance, pick up a child, leave the school vicinity; and for some particular reason, return through the school area at a speed of 50 mph while children are still leaving the building.

In many instances it appears that the individual concern of the parent is that period when their child is approaching the school crossing that speeds should be reduced. But, after his child has

safely entered the school building, the safety of other children is dismissed or neglected for some reason or another.

Many similar instances could be cited in Evansville and throughout several school areas in the city of Fort Wayne.

These are only two of the more alarming of instances which I actually observed and recorded as a traffic engineer serving the communities named. I am not endorsing them as being typical of all parents, nor am I condemning the parent. However, these parents compose a minority group that do present a problem which the traffic engineer, school officials and enforcement officials must reckon with as they face the problems of school crossing protection or traffic regulation within the area of the school.

The examples I have cited are not typical and should not be construed as a problem that is prevalent at all school locations. However, it is a problem and must be recognized.

The parent problem involves the traffic engineer, the enforcement and educational agencies.

THE APPROACH USED IN FORT WAYNE

I now would like to cite a way in which we met school crossing problems in Fort Wayne. At the outset, I must emphasize our method undoubtedly can be improved upon; however, we are of the opinion that the steps we have taken are within the financial structure of most communities and personnel available for projects involving school crossing studies.

During the spring months of the 1958-59 school year, assignments were made to study more than fifty school crossing locations in Fort Wayne. Some of these locations were protected, or traffic was regulated by an adult guard. Others were regulated with a traffic signal at a nearby location and the movement of school children controlled by a school patrol boy.

The information was collected at each school location at the same period of assembly, during morning, noon dismissal, afternoon assembly period, and afternoon dismissal.

Information collected at each location involved the number of cars passing through or approaching the intersection on the major street which school children must encounter to and from school. The pedestrians, of school-age only, were counted during the periods mentioned. The total time required to assemble and dismiss the children during the school day was noted. The pavement width in feet was also taken into account, and the accident ratio was also given a factor of weight in computing all the preceding collection of data.

As the field work was under way, office personnel developed factors whereby the various counts or observations could be given an annual average value during the month of March, April and May, and each day of the school week was weighted accordingly through this development. In other words, regardless of the day of the week or the month of the year, each location was adjusted upon an average annual value basis.

This method has discouraged the possibility of public resentment or statements to the effect that the school studies were conducted under unfavorable conditions even though the period of study ran through the early spring months until the week prior to the actual closing of school.

Accident factors were developed upon the basis of the possible pedestrian conflicts. The traffic control at a particular intersection or location was taken into account. We have a series of factors that vary for a two-way, two-way intersection with a signal, or a two-way, two-way intersection without a signal and variable accident patterns, including a location where it is a signalized one-way, two-way intersection; and lastly, one location involving a two-way street at a mid-block location. All of the factors were taken into account in each instance.

Computations for each location, the product of all the factors, was found to be such a small ratio bit of information to be weighted against a comparable situation, it was deemed advisable to multiply the final product by a constant factor of 1000 to develop a whole and decimal parts of a priority rating.

The high priority location, for example, had an adjusted traffic count of 3513 vehicles. Its ratio per thousand vehicles was 0.285. The pedestrian count at this school crossing during the study period involved 1273 students; the ratio per thousand in this instance was 0.785. The pavement width was 32 ft.; the ratio per foot 0.0313. The total time required to assemble and dismiss the children was 225 minutes; and inasmuch as the entire study involved 315 minutes, the ratio value became 1.4000. The total product had a value of 0.409 after applying the constant factor of 1000. The location last on the list had a product of all factors reaching an equivalent of 1572.919. With a priority table varying between the product limits as mentioned, it becomes very obvious that each school crossing can stand on its own merit, one against the other. For the most part this principle has been very favorably received.

Our study developed originally from the seriousness of the school crossing problem and the use of adult guards. Quite naturally, any project of this nature involves money; and as such, the budgets are prepared based on what taxpayers can afford in this particular instance.

The adult school crossing guard protection program involves an annual appropriation of $10,000.00. It becomes very obvious that one is limited as to the number of persons that may be employed when the total budget is of the figure mentioned. For this reason, each location has been studied and given a priority rating based on the principles outlined above, and our studies have been very well recognized and received by school authorities, P.T.A. groups, the Board of Public Safety, The Police Department, and representative councilmen from the various council districts have recognized the values of our study.

Occasionally, we get requests for an adult guard or studies for an adult guard at other school crossing locations. The study is programmed in the same manner as the original one and, similar factors applied. The product of all factors are rated according to the position in which it may fit into the overall study conducted up to date. If a given location has a priority above the lowest rating at which we employ adult guards, steps are taken at the earliest possible date to correct such a situation. Often it is possible to rearrange an assignment of an adult guard to cover more than one school crossing location. This is accomplished, in some instances, by the so-called method of staggering school hours in such a manner that the adult guard will have travel time between one school crossing location and that of another. Use of adult guard personnel in such instances has been very well received and has not placed an undue hardship on the adult guard.

From the results of our study, we are of the opinion that the annual drain upon the taxpayer, between ten and fifteen thousand dollars, is one that sooner or later must be recognized and ways and means developed to meet the school crossing problem in a more economical fashion.

Our recommendations in 1959 school crossing study made a brief statement to the effect that the gradual disappearance of the adult guard must be recognized through a program of installing school crossing signals that would only operate during the period of assembly and dismissal. The signal control would involve that of a constant green light on the major street, with a pedestrian actuated walk-wait signal for the convenience and safety of the student. So that it wouldn't become a plaything, actuation would only be available during

the school assembly and dismissal period. We have not made any installations of this type; however, the present administration will undoubtedly find ways and means whereby such steps may be taken. This statement is more or less predicated upon a recent installation of a school flasher signal at two locations which involved a school problem, that priority ratings would not permit the employment of an adult guard. However, a warning device was deemed advisable, and a school flasher warning signal was installed. It was an economical installation purely from the standpoint that the school sign was fabricated in the sign shop, a sectional signal head of an 8 inch lens was broken down, and one section mounted in the top and bottom of the sign, and the control device for flasher operation was converted from an obsolete controller by the signal department. The sign, the labor involved, the signal head sections, and the time clock were undoubtedly the most expensive pieces of equipment from a material standpoint. Labor, of course, in instances of this type, is more or less looked upon as personnel available for conditions of this nature. It is estimated, however, that the school crossing flasher signal indications would be an investment of less than $400, involving signal department personnel charges and labor charges in the sign shop to fabricate the sign and signal unit as well as the hangers to support the same for installation purposes.

We recognize there are other factors that could be used for further refinements of studies outlined in the preceding paragraphs; however, we are of the opinion that we are at present meeting the needs of Fort Wayne. It is important we recognize the need for expediting studies involving school crossings and developing ways and means for computing a unit of measurement for the purpose of comparing each location upon a priority basis.

We not only use the adult guard in Fort Wayne, but we encourage the assignment of school patrol boys at signalized and non-signalized intersections. We also rely upon the assignment of the school patrol boy at school crossing locations where a portable school sign is furnished. In each instance where it is possible, the regulation of school-age pedestrians has encouraged self-reliance on the part of the student. We have found this principle more advantageous than to develop a thought in the youngster's mind whereby crossing traffic to and from school is one that becomes a municipal problem at any level.

Traffic Engineers and persons in associated fields of public safety should encourage the training of school children to cope with the everyday problem of properly crossing a street through the flow of traffic upon any thoroughfare. Roughly speaking, a child of school

age spends more than two-thirds of the entire year apart from the guidance of a traffic safety program. Consequently, self-reliance in this instance becomes a safety factor of prime importance for his own well being.

As we review the school crossing problem, we cannot treat too lightly the importance for a unified program of cooperation. Cooperation at all levels from the parent, the school official and the traffic administrators require close coordination. I have experienced the unfortunate situation at some school locations where public-spirited groups were attempting every way possible to encourage school safety within the vicinity of a particular school, only to meet the obstacle of a school administrator who was not safety-minded and retarded the school traffic safety program.

However, executive officials of the school system in instances of this kind often find ways and means whereby such an individual may be properly assigned other duties within the school system. It is important that the school traffic safety program is recognized by the school authorities, the city administration, the police department and the traffic engineer. Each in their own field, develops ways and means whereby the community may better its school safety record and enjoy the reflection of a job well done in behalf of the coming generation of youngsters. Sooner or later the problem of pedestrian safety will reflect the fruit of our present-day efforts and surely future decades will record a reduction in pedestrian accidents.

TABLES USED FOR 1959 SCHOOL CROSSING STUDY,
FORT WAYNE, INDIANA

ANNUAL AVERAGE WEEKDAY SCHEDULE OF FACTORS

Month	Day of Week				
	Monday	Tuesday	Wednesday	Thursday	Friday
March	1.105	1.087	1.045	1.043	0.954
April	0.998	1.001	0.957	0.972	0.872
May	0.986	0.978	0.925	0.904	0.910

PEDESTRIAN-VEHICLE ACCIDENT CONFLICT RATIO

Possible Conflicts	Traffic Operation On		Traffic Control On	Ratio Value
	Major Street	Minor Street	Major Street	
24	2-Way	2-Way	None	0.0417
12	2-Way	2-Way	Signal	0.0833
14	2-Way	1-Way	None	0.0714
12	2-Way	2-Way(T)	None	0.0833
8	2-Way	1-Way(T)	None	0.1250
8	1-Way	1-Way	None	0.1250
6	1-Way	2-Way(T)	None	0.1666
(*) 1	1-Way	2-Way(T)	Signal	1.0000
2	2-Way Mid	Block	None	0.5000

* This ratio value applies only at the intersection Lafayette St. and Buchanan St., assuming that the pedestrian is crossing Lafayette St. (major St.) with traffic signal.

COMPUTATION OF PRIORITY RATING

$$\text{PRIORITY RATING} = \frac{1000}{\text{Adj.Veh.Count}} \times \frac{1000}{\text{Ped.Count}} \times \frac{1}{\text{Pvmt.Width in Feet}} \times \frac{\text{Total Survey Period in Min.}}{\text{School X-ing Use in Min.}} \times \frac{1}{\text{Ped.Acc. Conflicts}}$$